

## **REMARKS**

The Non-Final Office Action mailed February 20, 2007, has been received and reviewed. Claims 1–28 are currently pending in the application. All claims stand rejected. Applicants propose to amend claims 1, 12, and 13 as previously set forth. Reconsideration of the application in view of the above amendments and the following remarks is respectfully requested.

### **35 U.S.C. § 101 Rejections**

Claims 12 and 13 stand rejected under § 101 for claiming non-statutory subject matter. Specifically, the Office Action states that the preamble language “computer readable media” may be an electromagnetic signal. Claims 12 and 13 have been amended herein to recite “computer storage media” to overcome the examiner’s rejection. Support for the amendments to claims 12 and 13 may be found in the Specification of the subject application at least at ¶ [0040]. No new matter has been added. Therefore, Applicants respectfully request withdrawal of the § 101 rejection of claims 12 and 13.

### **35 U.S.C. § 103(a) Rejections**

#### **A.) Applicable Authority**

The basic requirements of a *prima facie* case of obviousness are summarized in MPEP §2143 through §2143.03. In order “[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success [in combining the references]. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or

suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)." MPEP § 2143. Further, in establishing a *prima facie* case of obviousness, the initial burden is placed on the Examiner. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985)." *Id.* See also MPEP §706.02(j) and §2142. Recently, the Supreme Court elaborated, at pages 13-14 of *KSR*, it will be necessary for [the Office] to look at interrelated teachings of multiple [prior art references]; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by [one of] ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the [patent application]." *KSR v. Teleflex*, No. 04-1350, 550 U.S.\_\_\_\_ (2007).

B.) Obviousness Rejection Based on Doverspike et al. (U.S. Patent Application Publication 2002/0097671) in view of Wolpert (U.S. Patent 6,577,601)

Claims 1-5 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0097671 to Doverspike et al. (hereinafter the "Doverspike reference") in view of U.S. Patent 6,577,601 to Wolpert (hereinafter the "Wolpert reference"). Applicants submit that a *prima facie* case of obviousness based upon the asserted combination of references as to claim 1 has not been established. As such, Applicants respectfully traverse this rejection, as hereinafter set forth.

It is respectfully submitted that none of the Doverspike reference, the Wolpert reference, nor the combination thereof, teach or suggest all of the limitations of independent claim 1, as amended herein. Independent claim 1, as amended herein, is directed to a method for identifying optimal mapping of logical links to the physical topology of a network. The method of amended independent claim 1 recites, among other things, “obtaining one or more mapping options for mapping multiple logical links between a first pair of network nodes and a second pair of network nodes, the first and second pair of network nodes sharing at least one node, onto physical paths that are at least relatively disjoint; [and] obtaining a maximum time delay allowed between each pair of network nodes . . . .” Applicants respectfully traverse this assertion, as hereinafter set forth.

It is submitted that the Doverspike reference in view of the Wolpert reference fails to teach or suggest all of the limitations of independent claim 1, as amended herein. More particularly, the Doverspike reference in view of the Wolpert reference fails to teach or suggest obtaining a maximum time delay *allowed* between *each pair* of network nodes and utilizing the maximum time delay between each pair of network nodes to identify optimal mapping of logical links to the physical topology of a network, as recited in independent claim 1. The maximum time delay allowed is an important Service Level Agreement parameter that is defined by Internet Service Providers. *See* Specification, ¶ [0029]. The delay between a first node and a second node of a network node pair should be below the value defined in the Service level Agreement. *Id.* On the other hand, the Wolpert reference describes the “average or minimum or maximum time delay for *entity delivery*.” *See*, Wolpert, Col. 3, lines 52-59 (emphasis added). Accordingly, the Wolpert reference discloses the maximum amount of time it takes to deliver an entity rather than the maximum time delay *allowed* between each pair of network nodes.

In addition, the Wolpert reference describes the “maximum time required for an entity to move from node *i* to the destination node  $B(\mu)$ .” *See*, Wolpert, Col. 5, lines 8-9. As such, the Wolpert reference provides for only *one pair* of network nodes and fails to describe a maximum allowed time delay for more than one pair of network nodes. Rather, the Wolpert reference merely discusses a maximum time for delivering an entity from a beginning node to an ending node with no regard for maximum times required for adjoining links between the beginning node and the ending node. Independent claim 1 of the present application, however, recites “obtaining a maximum time delay *allowed* between *each pair* of network nodes. As mentioned in independent claim 1, a first pair of network nodes and a second pair of network nodes share at least one node.

The Doverspike reference fails to cure the noted deficiencies of the Wolpert reference. The Doverspike reference discusses an approach for determining a path that connects adjacent network nodes. *See*, Doverspike, Abstract. The Doverspike reference, however, does not teach or suggest obtaining a maximum time delay allowed between each pair of network nodes. *See* Office Action, pg. 5.

It is also submitted, the Doverspike reference in view of the Wolpert reference fails to teach or suggest mapping options for mapping multiple logical links between one or more pairs of network nodes onto *physical paths* that are at least *relatively disjoint* as recited in independent claim 1, as amended herein. Rather, the Doverspike reference describes only *links diverse* from the *service path*. *See*, Doverspike at ¶ [0006]; [0033]. The Doverspike reference, however, does not describe *physical paths* that are relatively disjoint from *one another*.

In addition, the Doverspike reference in view of the Wolpert reference fails to teach or suggest physical paths that are at least *relatively disjoint* as recited in amended

independent claim 1. Rather, the Doverspike reference discloses that the “restoration path is selected from a graph of links in the network which are physically diverse from the service path.” *See*, Doverspike at ¶ [0006]; [0033]. The Doverspike reference further specifies that all links must be *completely* diverse from the service path. *Id.* at ¶ [0033] (“[A]ll links which are not physically diverse from the service path are deleted from the network topology graph.”) *Id.* at ¶ [0033]. The Doverspike reference, however, does not describe physical paths that are *relatively disjoint*. By contrast, as described in the specification of the present application, the physical paths may be merely *relatively* disjoint, as opposed to *completely* diverse as in Doverspike. *See*, Specification at ¶ [0042].

Moreover, where modifying a prior art reference destroys the purpose or function of the prior art reference, one skilled in the art would not have found a reason to make the modification. *See In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984). As previously mentioned, the Doverspike reference requires *all* links to be physically diverse from the service path. Modifying the Doverspike reference to include *relative* disjointedness, as recited in independent claim 1 of the present application, destroys the purpose and function of the Doverspike reference, *i.e.* selecting restoration paths in a telecommunications network. As such, there is no suggestion or motivation available to one of ordinary skill in the art to modify the reference.

In view of the above, it is respectfully submitted that none of the Doverspike reference, the Wolpert reference, or the combination thereof, teaches or suggests all of the limitations of claim 1, as amended herein. As such, it is respectfully submitted that a *prima facie* case of obviousness cannot be established for amended independent claim 1 based upon the asserted combination of references. *See, In re Vaeck*, 947 F.2d 488, 20 USPQ 2d 1438 (Fed. Cir.

1991). As such, withdrawal of the 35 U.S.C. § 103(a) rejection of claim 1 is respectfully requested.

Even if it is contended that the prior art references teach or suggest all the claim limitations of independent claim 1, there is no suggestion or motivation to combine the references. Factual findings in support of a *prima facie* case of obviousness must be supported by substantial evidence. *In re Zurko*, 59 USPQ2d 1693, 1696 (Fed. Cir. 2001). “The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. ‘To support the conclusions that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.’ *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat App. & Inter. 1985).” MPEP § 2142. MPEP § 2142 further states that “[w]hen the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper.” The Examiner is required to present actual evidence and make particular findings related to the motivation to combine the teachings of the references. *In re Kotzab*, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). “Broad conclusory statements regarding the teaching of multiple references, standing alone, are not “evidence.” *Dembiczak*, 50 USPQ2d at 1617. ““The factual inquiry whether to combine the references must be thorough and searching.”” *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002) (citing *McGinley v. Franklin Sports, Inc.*, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001)). The factual inquiry must be based on objective evidence of record, and cannot be based on subjective belief and unknown authority. *Id.* at 1433-34. The Examiner must explain the reasons that one

of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. *In re Rouffet*, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

The Office Action has not presented any evidence why the Doverspike and Wolpert references would have been combined. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP § 2143.01. Specifically, there must be a suggestion or motivation in the references to make the combination or modification. *Id.* The sole support in the Office Action for such a combination is that “[i]t would have been obvious to use maximum time delay as the cost metric, as in Wolpert, in the method for identifying optimal mapping of logical links to the physical network topology as in Doverspike et al. for the purpose of selecting the optimal logical path that meets a defined time constraint.” Office Action, pg. 5. The Office Action cannot rely on the benefit of the combination without first supporting the motivation to make the combination. Such motivation does not appear anywhere in either of the references, and the Office Action has not presented any actual evidence in support of the same. Instead, the Office Action relies on broad conclusory statements, subjective belief, and unknown authority. Such a basis does not adequately support the combination of references; therefore, the combination is improper and should be withdrawn.

In view of the above, it is respectfully submitted that there is no motivation to combine the Doverspike reference and the Wolpert reference. Accordingly, it is respectfully submitted that a *prima facie* case of obviousness cannot be established for independent claim 1 based upon the asserted combination of references. *See, In re Vaeck*, 947 F.2d 488, 20 USPQ 2d

1438 (Fed. Cir. 1991). As such, withdrawal of the 35 U.S.C. § 103(a) rejection of claim 1 is respectfully requested.

Each of claims 2-5 and 12 depends, either directly or indirectly, from independent claim 1. Accordingly, it is respectfully submitted that a *prima facie* case of obviousness of claims 2-5 and 12 cannot be established based upon the Doverspike reference in view of the Wolpert reference for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988) (a dependent claim is obvious only if the independent claim from which it depends is obvious); *see also*, MPEP § 2143.03. As such, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 2-5 and 12 is respectfully requested as well.

C.) Obviousness Rejection Based on Doverspike et al. (U.S. Patent Application Publication 2002/0097671) in view of Wolpert (U.S. Patent 6,577,601) and in further view of Nishiyama et al. (European Patent # EP950966)

Claims 6, 7, 11, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0097671 to Doverspike et al. (hereinafter the “Doverspike reference”) in view of U.S. Patent 6,577,601 to Wolpert (hereinafter the “Wolpert reference”) and further in view of European Patent EP950966 to Nishiyama et al. (hereinafter the “Nishiyama reference”). As the Examiner has failed to establish a *prima facie* case of obviousness based upon the asserted combination of references, Applicants respectfully traverse this rejection, as hereinafter set forth.

As stated above, none of the Doverspike reference, the Wolpert reference, or the combination thereof, teach or suggest all of the limitations of independent claim 1 on which claims 6, 7, 11, and 13 indirectly depend. In addition, the Nishiyama reference fails to cure the noted deficiencies of the Wolpert and Doverspike references. The Nishiyama reference discusses sequentially routing connection lines between nodes of a graph. *See, Nishiyama*,



Abstract. The Nishiyama reference, however, does not teach or suggest, among other things, obtaining a maximum time delay allowed between each pair of network nodes. *See* Office Action, pg. 5.

Further, even if the Examiner determines that the Doverspike and Wolpert references teach all of the limitations of independent claim 1, the combination would still fail to teach or suggest all of the limitations of dependent claims 6, 7, 11, and 13. Among other things, dependent claims 6 and 7 discuss a priority order of network node pairs. More specifically, dependent claim 6 recites “obtaining a priority order of the network node pairs,” and dependent claim 7 recites “correlating the mapping options with . . . the priority order of the network node pairs to identify optimal mapping of logical links to the physical topology of a network.” As stated in the specification, priority order assists in managing the distribution of resources across network nodes, improving robustness, and limiting the search space. By contrast, the Nishiyama reference teaches that a pair of nodes having a higher priority is “located at the nearer position.” *See*, Nishiyama, ¶ [0009].

Accordingly, none of the Doverspike reference, the Wolpert reference, the Nishiyama reference or the combination thereof, teach or suggest all of the limitations of dependent claims 6, 7, 11, and 13. It is respectfully submitted that a *prima facie* case of obviousness of claims 6, 7, 11, and 13 cannot be established based upon the Doverspike reference in view of the Wolpert reference in view of the Nishiyama reference for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988); *see also*, MPEP § 2143.03. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 6, 7, 11, and 13 is respectfully requested as well.

In addition, there is no suggestion from the prior art to combine any of the Doverspike, Wolpert, and Nishiyama references, nor is there a suggestion from the prior art to modify any combination of prior art references to achieve the invention of claims 6, 7, 11, and 13. Accordingly, for at least the above-cited reasons, claims 6, 7, 11, and 13 are patentable and Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of these claims.

D. Obviousness Rejection Based on Doverspike et al. (U.S. Patent Application Publication 2002/0097671) in view of Wolpert (U.S. Patent 6,577,601) and in further view of Nishiyama et al. (European Patent EP950966) and further in view of Modiano et al. ("Survivable Routing of Logical Topologies in WDM Networks")

Claims 8 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0097671 to Doverspike et al. (hereinafter the "Doverspike reference") in view of U.S. Patent 6,577,601 to Wolpert (hereinafter the "Wolpert reference") and further in view of European Patent EP950966 to Nishiyama et al. (hereinafter the "Nishiyama reference") and further in view of "Survivable Routing of Logical Topologies in WDM Networks" by Modiano et al. (hereinafter the "Modiano reference"). As the Examiner has failed to establish a *prima facie* case of obviousness based upon the asserted combination of references, Applicants respectfully traverse this rejection, as hereinafter set forth.

As stated above, none of the Doverspike reference, the Wolpert reference, or the combination thereof, teach or suggest all of the limitations of independent claim 1 on which claims 8 and 10 indirectly depend. In addition, the Modiano reference fails to cure the noted deficiencies of the Wolpert reference. The Modiano reference discusses a "formulation to route various logical topologies over a number of different physical topologies." *See*, Modiano, Abstract. The Modiano reference, however, does not teach or suggest, among other things, obtaining a maximum time delay allowed between each pair of network nodes.

It is respectfully submitted that a *prima facie* case of obviousness of claims 8 and 10 cannot be established based upon the Doverspike reference in view of the Wolpert reference in further view of Nishiyama and further in view of the Modiano reference for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988); *see also*, MPEP § 2143.03. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 8 and 10 is respectfully requested.

In addition, none of the Doverspike reference, the Wolpert reference, the Nishiyama reference, or the combination thereof, teach or suggest all of the limitations of dependent claim 7 on which claims 8 and 10 depend. It is respectfully submitted that a *prima facie* case of obviousness of claims 8 and 10 cannot be established based upon the Doverspike reference in view of the Wolpert reference and further in view of Nishiyama for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988); *see also*, MPEP § 2143.03. In addition, the Modiano reference fails to cure the noted deficiencies of the Doverspike, Wolpert, and Nishiyama references. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 8 and 10 is respectfully requested.

Further, there is no suggestion from the prior art to combine any of the Doverspike, Wolpert, Nishiyama, and Modiano references, nor is there a suggestion from the prior art to modify any combination of prior art references to achieve the invention of claims 8 and 10. Accordingly, for at least the above-cited reasons, claims 8 and 10 are patentable and Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of these claims.

E. Obviousness Rejection Based on Doverspike et al. (U.S. Patent Application Publication 2002/0097671) in view of Wolpert (U.S. Patent 6,577,601) and in further view of Nishiyama et al. (European Patent EP950966) and further in view of Nucci et al. ("Design of Fault-Tolerant Logical Topologies in Wavelength-Routed Optical IP Networks")

Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0097671 to Doverspike et al. (hereinafter the "Doverspike reference") in view of U.S. Patent 6,577,601 to Wolpert (hereinafter the "Wolpert reference") and further in view of European Patent EP950966 to Nishiyama et al. (hereinafter the "Nishiyama reference") and further in view of "Design of Fault-Tolerant Logical Topologies in Wavelength-Routed Optical IP Networks" by Nucci et al. (hereinafter the "Nucci reference"). As the Examiner has failed to establish a *prima facie* case of obviousness based upon the asserted combination of references, Applicants respectfully traverse this rejection, as hereinafter set forth.

As stated above, none of the Doverspike reference, the Wolpert reference, or the combination thereof, teach or suggest all of the limitations of independent claim 1 on which claim 9 indirectly depends. In addition, the Nucci reference fails to cure the noted deficiencies of the Wolpert and Doverspike references. The Nucci reference discusses a method for "the design of fault-tolerant logical topologies in wavelength-routed optical networks exploiting wavelength division multiplexing." *See*, Nishiyama, Abstract. The Nucci reference, however, does not teach or suggest, among other things, obtaining a maximum time delay allowed between each pair of network nodes.

It is respectfully submitted that a *prima facie* case of obviousness of claim 9 cannot be established based upon the Doverspike reference in view of the Wolpert reference in further view of Nishiyama and further in view of Nucci for at least the above-cited reasons. *See*,

*In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988); *see also*, MPEP § 2143.03. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claim 9 is respectfully requested.

In addition, none of the Doverspike reference, the Wolpert reference, the Nishiyama reference, or the combination thereof, teach or suggest all of the limitations of dependent claim 7 on which claim 9 depends. The Nucci reference fails to cure the noted deficiencies of the Wolpert, Doverspike, and Nishiyama references. It is respectfully submitted that a *prima facie* case of obviousness of claim 9 cannot be established based upon the Doverspike reference in view of the Wolpert reference and further in view of Nishiyama and further in view of Nucci for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988); *see also*, MPEP § 2143.03. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claim 9 is respectfully requested.

Further, there is no suggestion from the prior art to combine any of the Doverspike, Wolpert, Nishiyama, and Nucci references, nor is there a suggestion from the prior art to modify any combination of prior art references to achieve the invention of claim 9. Accordingly, for at least the above-cited reasons, claim 9 is patentable and Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of this claim.

F. Obviousness Rejection Based on Armitage et al. (“Design of a Survivable WDM Photonic Network”) in view of Wang (U.S. Patent 5,500,808)

Claims 14-16 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over “Design of a Survivable WDM Photonic Network” by Armitage et al. (hereinafter the “Armitage reference”) in view of U.S. Patent 5,500,808 to Wang (hereinafter the “Wang reference”). Applicants submit that a *prima facie* case of obviousness based upon the

asserted combination of references as to independent claim 14 has not been established. As such, Applicants respectfully traverse this rejection, as hereinafter set forth.

It is respectfully submitted that none of the Armitage reference, the Wang reference, nor the combination thereof, teach or suggest all of the limitations of independent claim 14. Independent claim 14 is directed to a computer system for identifying optimal mapping of logical links onto the physical topology of a network. The claim recites, in part, “a practical constraint module comprising a mapping option sub-module for obtaining one or more mapping options for multiple logical links between one or more pairs of network nodes onto physical paths that are at least relatively disjoint and a maximum time delay sub-module for obtaining a maximum time delay allowed between the each pair of network nodes.”

It is submitted that the Armitage reference in view of the Wang reference fails to teach or suggest all of the limitations of independent claim 14. More particularly, the Armitage reference in view of the Wang reference fails to teach or suggest “a maximum time delay sub-module for obtaining a maximum time delay *allowed* between *each pair* of network nodes,” as recited in independent claim 14. The maximum time delay allowed is an important Service Level Agreement parameter that is defined by Internet Service Providers. *See* Specification, ¶ [0029]. The delay between any network node pair should be below the value defined in the Service level Agreement. *Id.*

The Wang reference, on the other hand, describes generating absolute time values to obtain an absolute value of the time delay. *See*, Wang, Col. 8, lines 35-41. As stated in the Wang specification, an absolute value for the time delay “means an approximation of the *actual time* associated with the mapped and optimized logical network in the target technology. . . .” *Id.* at Col. 3, lines 21-25 (emphasis added). As such, the Wang reference teaches an *actual* time

rather than a maximum time delay *allowed* by, for example, a Service Level Agreement. Accordingly, the Wang reference does not describe a maximum *allowed* time delay between *each pair* of network nodes.

The Armitage reference fails to cure the noted deficiencies of the Wang reference. The Armitage reference discusses “schemes for protecting a network using a Wavelength Division Multiplexing (WDM) infrastructure against component or link failures.” *See*, Armitage, Abstract. The Armitage reference, however, does not teach or suggest obtaining a maximum time delay allowed between each pair of network nodes. *See* Office Action, pg. 15.

It is also submitted that the Armitage reference in view of the Wang reference fails to teach or suggest a mapping option sub-module for obtaining one or more mapping options for multiple logical links between one or more pairs of network nodes onto *physical paths* that are at least *relatively disjoint*. Rather, the Armitage reference describes only *optical links* diverse from the *clear-channel*. *See*, Armitage, pg. 7, Design Protection, The Principle, ¶ 2. The Armitage reference, however, does not describe *physical paths* that are relatively disjoint from *one another*.

In addition, the Armitage reference in view of the Wang reference fails to teach or suggest physical paths that are at least *relatively disjoint* as recited in independent claim 1. Rather, the Armitage reference discloses that the “[t]he DAP algorithm maps the clear-channels onto the physical network in such a way that, for each of them, there exists an alternate path with the same end-nodes, but *sharing no* optical link with the clear-channel to which it is associated.” *See, Id.* at ¶ 2. The Armitage reference, however, does not describe physical paths that are *relatively disjoint*. By contrast, as described in the specification of the present application, the

physical paths may be merely *relatively* disjoint, as opposed to *completely* diverse as in Armitage. *See*, Specification at ¶ [0042].

Moreover, where modifying a prior art reference destroys the purpose or function of the prior art reference, one skilled in the art would not have found a reason to make the modification. *See In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984). As previously mentioned, the Armitage reference requires *all* links to be physically diverse from the service path. Modifying the Armitage reference to include *relative* disjointedness, as recited in independent claim 14 of the present application, destroys the purpose and function of the Armitage reference, *i.e.* protecting a network against component or link failures. As such, there is no suggestion or motivation available to one of ordinary skill in the art to modify the reference.

In view of the above, it is respectfully submitted that none of the Armitage reference, the Wang reference, or the combination thereof, teaches or suggests all of the limitations of claim 14. As such, it is respectfully submitted that a *prima facie* case of obviousness cannot be established for independent claim 14 based upon the asserted combination of references. *See, In re Vaeck*, 947 F.2d 488, 20 USPQ 2d 1438 (Fed. Cir. 1991). As such, withdrawal of the 35 U.S.C. § 103(a) rejection of claim 14 is respectfully requested.

Even if it is contended that the prior art references teach or suggest all the claim limitations of independent claim 14, there is no suggestion or motivation to combine the references. Factual findings in support of a *prima facie* case of obviousness must be supported by substantial evidence. *In re Zurko*, 59 USPQ2d 1693, 1696 (Fed. Cir. 2001). “The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. ‘To support the conclusions that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or



the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.’ *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat App. & Inter. 1985).” MPEP § 2142. MPEP § 2142 further states that “[w]hen the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper.” The Examiner is required to present actual evidence and make particular findings related to the motivation to combine the teachings of the references. *In re Kotzab*, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). “Broad conclusory statements regarding the teaching of multiple references, standing alone, are not “evidence.” *Dembiczak*, 50 USPQ2d at 1617. ““The factual inquiry whether to combine the references must be thorough and searching.”” *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002) (citing *McGinley v. Franklin Sports, Inc.*, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001)). The factual inquiry must be based on objective evidence of record, and cannot be based on subjective belief and unknown authority. *Id.* at 1433-34. The Examiner must explain the reasons that one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. *In re Rouffet*, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

The Office Action has not presented any evidence why the Armitage and Wang references would have been combined. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP § 2143.01. Specifically, there must be a suggestion or motivation in the references to make the combination or modification. *Id.* The sole support in the Office Action for such a combination is that “it would have been obvious to a person or

ordinary skill at the time the invention was made to use the module for obtaining a maximum time delay as taught by Wang in the computer system for identifying optimal mapping of logical links in Armitage et al. for the purpose of selecting the optimal logical path that meets a defined time constraint.” Office Action, pgs. 15-16. The Office Action cannot rely on the benefit of the combination without first supporting the motivation to make the combination. Such motivation does not appear anywhere in either of the references, and the Office Action has not presented any actual evidence in support of the same. Instead, the Office Action relies on broad conclusory statements, subjective belief, and unknown authority. Such a basis does not adequately support the combination of references; therefore, the combination is improper and should be withdrawn.

In view of the above, it is respectfully submitted that there is no motivation to combine the Armitage reference and the Wang reference. Accordingly, it is respectfully submitted that a *prima facie* case of obviousness cannot be established for independent claim 14 based upon the asserted combination of references. *See, In re Vaeck*, 947 F.2d 488, 20 USPQ 2d 1438 (Fed. Cir. 1991). As such, withdrawal of the 35 U.S.C. § 103(a) rejection of claim 14 is respectfully requested.

Each of claims 15, 16, and 18 depends, either directly or indirectly, from independent claim 14. Accordingly, it is respectfully submitted that a *prima facie* case of obviousness of claims 15, 16, and 18 cannot be established based upon the Armitage reference in view of the Wang reference for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988) (a dependent claim is obvious only if the independent claim from which it depends is obvious); *see also*, MPEP § 2143.03. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 15, 16, and 18 is respectfully requested as well.

G. Obviousness Rejection Based on Armitage et al. (“Design of a Survivable WDM Photonic Network”) in view of Wang (U.S. Patent 5,500,808) and further in view of Doverspike et al. (U.S. Patent Application Publication No. 2002/0097671)

Claims 17 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over “Design of a Survivable WDM Photonic Network” by Armitage (hereinafter the “Armitage reference”) in view of U.S. Patent 5,500,808 to Wang (hereinafter the “Wang reference”) and further in view of U.S. Patent Application Publication No. 2002/0097671 to Doverspike et al. (hereinafter the “Doverspike reference”). As the Examiner has failed to establish a *prima facie* case of obviousness based upon the asserted combination of references, Applicants respectfully traverse this rejection, as hereinafter set forth.

As stated above, none of the Armitage reference, the Wang reference, or the combination thereof, teach or suggest all of the limitations of independent claim 14 on which claims 17 and 18 indirectly depend. It is respectfully submitted that a *prima facie* case of obviousness of claims 17 and 18 cannot be established based upon the Armitage reference in view of the Wang reference for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988); *see also*, MPEP § 2143.03. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 17 and 18 is respectfully requested as well.

In addition, there is no suggestion from the prior art to combine any of the Armitage, Wang, and Doverspike references, nor is there a suggestion from the prior art to modify any combination of prior art references to achieve the invention of claims 17 and 18. Accordingly, for at least the above-cited reasons, claims 17 and 18 are patentable and Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of these claims.

H. Obviousness Rejection Based on Armitage et al. (“Design of a Survivable WDM Photonic Network”) in view of Wang (U.S. Patent 5,500,808) and further in view of Doverspike et al. (U.S. Patent Application Publication No. 2002/0097671) and further in view of Nucci et al. (“Design of Fault-Tolerant Logical Topologies in Wavelength-Routed Optical IP Networks”)

Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over “Design of a Survivable WDM Photonic Network” by Armitage (hereinafter the “Armitage reference”) in view of U.S. Patent 5,500,808 to Wang (hereinafter the “Wang reference”) and further in view of U.S. Patent Application Publication No. 2002/0097671 to Doverspike et al. (hereinafter the “Doverspike reference”) and further in view of “Design of Fault-Tolerant Logical Topologies in Wavelength-Routed Optical IP Networks” by Nucci et al. (hereinafter the “Nucci reference”). As the Examiner has failed to establish a *prima facie* case of obviousness based upon the asserted combination of references, Applicants respectfully traverse this rejection, as hereinafter set forth.

As stated above, none of the Armitage reference, the Wang reference, or the combination thereof, teach or suggest all of the limitations of independent claim 14 on which claim 20 indirectly depends. It is respectfully submitted that a *prima facie* case of obviousness of claim 20 cannot be established based upon the Armitage reference in view of the Wang reference for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988); *see also*, MPEP § 2143.03. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claim 20 is respectfully requested as well.

In addition, there is no suggestion from the prior art to combine any of the Armitage, Wang, Doverspike, and Nucci references, nor is there a suggestion from the prior art to modify any combination of prior art references to achieve the invention of claim 20.

Accordingly, for at least the above-cited reasons, claim 20 are patentable and Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of these claims.

I. Obviousness Rejection Based on Armitage et al. (“Design of a Survivable WDM Photonic Network”) in view of Wang (U.S. Patent 5,500,808) and further in view of Doverspike et al. (U.S. Patent Application Publication No. 2002/0097671) and further in view of Modiano et al. (“Survivable Routing of Logical Topologies in WDM Networks”)

Claims 19 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over “Design of a Survivable WDM Photonic Network” by Armitage (hereinafter the “Armitage reference”) in view of U.S. Patent 5,500,808 to Wang (hereinafter the “Wang reference”) and further in view of U.S. Patent Application Publication No. 2002/0097671 to Doverspike et al. (hereinafter the “Doverspike reference”) and further in view of “Survivable Routing of Logical Topologies in WDM Networks” by Modiano et al. (hereinafter the “Modiano reference”). As the Examiner has failed to establish a *prima facie* case of obviousness based upon the asserted combination of references, Applicants respectfully traverse this rejection, as hereinafter set forth.

As stated above, none of the Armitage reference, the Wang reference, or the combination thereof, teach or suggest all of the limitations of independent claim 14 on which claims 19 and 21 indirectly depend. It is respectfully submitted that a *prima facie* case of obviousness of claims 19 and 21 cannot be established based upon the Armitage reference in view of the Wang reference for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988); *see also*, MPEP § 2143.03. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 19 and 21 is respectfully requested as well.

In addition, there is no suggestion from the prior art to combine any of the Armitage, Wang, Doverspike, and Modiano references, nor is there a suggestion from the prior art to modify any combination of prior art references to achieve the invention of claims 19 and

20. Accordingly, for at least the above-cited reasons, claims 19 and 20 are patentable and Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of these claims.

J. Obviousness Rejection Based on Doverspike et al. (U.S. Patent Application Publication No. 2002/0097671) and in view of Wang et al. (U.S. Patent No. 5,500,808)

Claims 22-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0097671 to Doverspike (hereinafter the “Doverspike reference”) in view of U.S. Patent 5,500,808 to Wang (hereinafter the “Wang reference”). Applicants submit that a prima facie case of obviousness based upon the asserted combination of references as to independent claim 22 has not been established. As such, Applicants respectfully traverse this rejection, as hereinafter set forth.

It is respectfully submitted that none of the Doverspike reference, the Wang reference, nor the combination thereof, teach or suggest all of the limitations of independent claim 22. Independent claim 22 is directed to a computer system for identifying optimal mapping of logical links onto the physical topology of a network. The claim recites, in part, “means for obtaining one or more mapping options for mapping multiple logical links between one or more pairs of network nodes onto physical paths that are at least relatively disjoint; [and] means for obtaining a maximum time allowed between the each pair of network nodes.”

It is submitted that the Doverspike reference in view of the Wang reference fails to teach or suggest all of the limitations of independent claim 22. More particularly, the Doverspike reference in view of the Wang reference fails to teach or suggest “means for obtaining a maximum time delay *allowed* between *each pair* of network nodes,” as recited in independent claim 22. The maximum time delay allowed is an important Service Level Agreement parameter that is defined by Internet Service Providers. *See* Specification, ¶ [0029].

The delay between any network node pair should be below the value defined in the Service level Agreement. *Id.*

The Wang reference, on the other hand, describes generating absolute time values to obtain an absolute value of the time delay. *See*, Wang, Col. 8, lines 35-41. As stated in the Wang specification, an absolute value for the time delay "means an approximation of the *actual time* associated with the mapped and optimized logical network in the target technology. . . ." *Id.* at Col. 3, lines 21-25 (emphasis added). As such, the Wang reference teaches an *actual* time rather than a maximum time delay *allowed* by, for example, a Service Level Agreement. Accordingly, the Wang reference does not describe a maximum *allowed* time delay between *each pair* of network nodes.

It is also submitted that the Doverspike reference in view of the Wang reference fails to teach or suggest mapping options for mapping multiple logical links between one or more pairs of network nodes onto *physical paths* that are at least *relatively disjoint* as recited in independent claim 22. Rather, the Doverspike reference describes only *links diverse* from the *service path*. *See*, Doverspike at ¶ [0006]; [0033]. The Doverspike reference, however, does not describe *physical paths* that are relatively disjoint from *one another*.

In addition, the Doverspike reference in view of the Wang reference fails to teach or suggest physical paths that are at least *relatively disjoint* as recited in independent claim 22. Rather, the Doverspike reference discloses that the "restoration path is selected from a graph of links in the network which are physically diverse from the service path." *See*, Doverspike at ¶ [0006]; [0033]. The Doverspike reference further specifies that all links must be *completely* diverse from the service path. *Id.* at ¶ [0033] ("[A]ll links which are not physically diverse from the service path are deleted from the network topology graph.") *Id.* at ¶ [0033]. The Doverspike

reference, however, does not describe physical paths that are *relatively disjoint*. By contrast, as described in the specification of the present application, the physical paths may be merely *relatively* disjoint, as opposed to *completely* diverse as in Doverspike. See, Specification at ¶ [0042].

Moreover, where modifying a prior art reference destroys the purpose or function of the prior art reference, one skilled in the art would not have found a reason to make the modification. See *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984). As previously mentioned, the Doverspike reference requires *all* links to be physically diverse from the service path. Modifying the Doverspike reference to include *relative* disjointedness, as recited in independent claim 1 of the present application, destroys the purpose and function of the Doverspike reference, *i.e.* selecting restoration paths in a telecommunications network. As such, there is no suggestion or motivation available to one of ordinary skill in the art to modify the reference.

In view of the above, it is respectfully submitted that none of the Doverspike reference, the Wang reference, or the combination thereof, teaches or suggests all of the limitations of claim 22. As such, it is respectfully submitted that a *prima facie* case of obviousness cannot be established for independent claim 22 based upon the asserted combination of references. See, *In re Vaeck*, 947 F.2d 488, 20 USPQ 2d 1438 (Fed. Cir. 1991). As such, withdrawal of the 35 U.S.C. § 103(a) rejection of claim 22 is respectfully requested.

Even if it is contended that the prior art references teach or suggest all the claim limitations of independent claim 22, there is no suggestion or motivation to combine the references. Factual findings in support of a *prima facie* case of obviousness must be supported by substantial evidence. *In re Zurko*, 59 USPQ2d 1693, 1696 (Fed. Cir. 2001). “The initial burden is on the examiner to provide some suggestion of the desirability of doing what the



inventor has done. ‘To support the conclusions that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.’ *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat App. & Inter. 1985).” MPEP § 2142. MPEP § 2142 further states that “[w]hen the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper.” The Examiner is required to present actual evidence and make particular findings related to the motivation to combine the teachings of the references. *In re Kotzab*, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). “Broad conclusory statements regarding the teaching of multiple references, standing alone, are not “evidence.” *Dembiczak*, 50 USPQ2d at 1617. ““The factual inquiry whether to combine the references must be thorough and searching.”” *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002) (citing *McGinley v. Franklin Sports, Inc.*, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001)). The factual inquiry must be based on objective evidence of record, and cannot be based on subjective belief and unknown authority. *Id.* at 1433-34. The Examiner must explain the reasons that one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. *In re Rouffet*, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

The Office Action has not presented any evidence why the Doverspike and Wang references would have been combined. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP § 2143.01. Specifically, there must be a suggestion or

motivation in the references to make the combination or modification. *Id.* The sole support in the Office Action for such a combination is that “it would have been obvious to a person of ordinary skill at the time the invention was made to use the means for obtaining a maximum time delay as taught by Wang in the system for identifying optimal mapping of logical links in Doverspike et al. for the purpose of selecting the optimal logical path that meets a defined time constraint.” Office Action, pg. 23. The Office Action cannot rely on the benefit of the combination without first supporting the motivation to make the combination. Such motivation does not appear anywhere in either of the references, and the Office Action has not presented any actual evidence in support of the same. Instead, the Office Action relies on broad conclusory statements, subjective belief, and unknown authority. Such a basis does not adequately support the combination of references; therefore, the combination is improper and should be withdrawn.

In view of the above, it is respectfully submitted that there is no motivation to combine the Doverspike reference and the Wang reference. Accordingly, it is respectfully submitted that a *prima facie* case of obviousness cannot be established for independent claim 22 based upon the asserted combination of references. *See, In re Vaeck*, 947 F.2d 488, 20 USPQ 2d 1438 (Fed. Cir. 1991). As such, withdrawal of the 35 U.S.C. § 103(a) rejection of claim 22 is respectfully requested.

Each of claims 23-26 depends, either directly or indirectly, from independent claim 22. Accordingly, it is respectfully submitted that a *prima facie* case of obviousness of claims 23-26 cannot be established based upon the Doverspike reference in view of the Wang reference for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988) (a dependent claim is obvious only if the independent claim from which it depends is

obvious); *see also*, MPEP § 2143.03. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 23-26 is respectfully requested as well.

K. Obviousness Rejection Based on Doverspike et al. (U.S. Patent Application Publication No. 2002/0097671) and in view of Wang et al. (U.S. Patent No. 5,500,808) and further in view of Nishiyama et al. (European Patent EP950966)

Claims 27 and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0097671 to Doverspike et al. (hereinafter the “Doverspike reference”) in view of U.S. Patent No. 5,500,808 to Wang (hereinafter the “Wang reference”) and further in view of European Patent EP950966 to Nishiyama et al. (hereinafter the “Nishiyama reference”). As the Examiner has failed to establish a *prima facie* case of obviousness based upon the asserted combination of references, Applicants respectfully traverse this rejection, as hereinafter set forth.

As stated above, none of the Doverspike reference, the Wang reference, or the combination thereof, teach or suggest all of the limitations of independent claim 22 on which claims 27 and 28 indirectly depend. It is respectfully submitted that a *prima facie* case of obviousness of claims 27 and 28 cannot be established based upon the Doverspike reference in view of the Wang reference for at least the above-cited reasons. *See, In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988); *see also*, MPEP § 2143.03. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 27 and 28 is respectfully requested as well.

In addition, there is no suggestion from the prior art to combine any of the Doverspike, Wang, and Nishiyama references, nor is there a suggestion from the prior art to modify any combination of prior art references to achieve the invention of claims 27 and 28. Accordingly, for at least the above-cited reasons, claims 27 and 28 are patentable and Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of these claims.

### **CONCLUSION**

Each of claims 1–28, as amended herein, is believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should it be determined that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

It is believed that no fee is due in conjunction with the present Amendment. However, if this belief is in error, the Commissioner is hereby authorized to charge any amount required, or credit any overpayment, to Deposit Account No. 21-0765.

Respectfully submitted,

/Kelly T. Feimster/

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